

- Designed for Medical Equipment (BF rated)
- High Efficiency
- 300W = 6 in x 3 in footprint, 400W = 6.5 in x 3.5 in
- 1W standby (EFE400M only)
- High Power Density (up to 18W/in³)
- No minimum load
- Fits 1U applications
- 3 Year Warranty

EFE300M / EFE400M

300/400 Watts, medical (BF rated)
AC-DC, digital power solution

Key Market Segments & Applications

- | | |
|-----------------------------|-------------------------|
| Medical | Broadcast |
| Instrumentation | ATE |
| Automation | Industrial Computing |
| Security | Lifesciences/Laboratory |
| Network Servers and Routers | |

Features and Benefits

Features

- Reinforced isolation
- Full Digital Control
- High Efficiency
- Low Profile
- High Power Density
- Temperature controlled fan option

Benefits

- Simplifies equipment design
- Improves Product Performance
- Minimises heat in system
- Fits 1U applications
- Less Space
- Quieter operation

INPUT

Input Voltage	90 - 264Vac / 120 - 350Vdc	Input Frequency	45 - 63Hz (440Hz with reduced PFC - consult factory)
Input Harmonics	EN61000-3-2 compliant	Power Factor	0.97 typical
Input Fuse	Dual fuses (Live + Neutral) Fast acting (not user accessible)	Inrush Current	<40A at 25°C and 230Vac, (cold start) (meets EN61000-3-3)
Earth Leakage Current	123µA at 120Vac (60Hz), 257µA max at 240Vac (60Hz) Worst case leakage current is less than 300µA at 264Vac, 63Hz (normal condition, 0.5mA Single Fault Condition)		

QUICK SELECTOR (Standard models). Additional variants available - see below

Output Voltage	Current	Units without fan				Units with end fan	
		Open Frame		Cover + Chassis		Cover + Chassis	
		Description	Order Code	Description	Order Code	Description	Order Code
12V	25A	EFE300M-12-5-HNMDL-YT	U5Y0020	EFE300M-12-5-HCMDL-YT	U5Y001Z	EFE300M-12-5-ECMDL-YT	U5Y0031
	33.3A	EFE400M-12-5-HNMDL-YT	U6Y001H	EFE400M-12-5-HCMDL-YT	U6Y004L	EFE400M-12-5-ECMDL-YT	U6Y007P
24V	12.5A	EFE300M-24-5-HNMDL-YT	U5Y0053	EFE300M-24-5-HCMDL-YT	U5Y0042	EFE300M-24-5-ECMDL-YT	U5Y0064
	16.7A	EFE400M-24-5-HNMDL-YT	U6Y002J	EFE400M-24-5-HCMDL-YT	U6Y005M	EFE400M-24-5-ECMDL-YT	U6Y008Q
48V	6.25A	EFE300M-48-5-HNMDL-YT	U5Y0201	EFE300M-48-5-HCMDL-YT	U5Y0223	EFE300M-48-5-ECMDL-YT	U5Y0166
	8.3A	EFE400M-48-5-HNMDL-YT	U6Y003K	EFE400M-48-5-HCMDL-YT	U6Y006N	EFE400M-48-5-ECMDL-YT	U6Y009R

HOW TO CREATE A PRODUCT CODE

Output	Factory Setting Range	
	EFE300M	EFE400M
12	11.4 - 13.2V	11.4 - 13.2V
24	22.8 - 26.4V	22.8 - 26.4V
28	27 - 32V	
36	36 - 42V	
48	47 - 50V	47 - 50V
50	50 - 54V	

Required output voltage must be specified at time of ordering

Standby Voltage
5 = 5V / 2A
12 = 12V / 1A

Case/Fan Option

- HN Open frame, no fan, with 12V / 1A fan supply
- HU U chassis, no fan, with 12V / 1A fan supply
- HC Cover+chassis, no fan, with 12V / 1A fan supply
- EC Cover+chassis, end fan (temp controlled)
- NN Open frame, no fan, no fan supply
- NU U chassis, no fan, no fan supply
- NC Cover+chassis, no fan, no fan supply

Other Options:

- Y = ORing FET included
- blank = right angled
- V = Vertical
- E = Enable
- T = Inhibit
- L = 300µA
- M Molex kk
- S Molex sabre (EFE400M only) (see pg 3 for details)

Product Code Structure: **EFE300M- or EFE400M-** Vout - Standby Case/Fan Option Input Connector **D** - Dual-Fused Earth Leakage ORing FET Remote On/Off Output Connector

Confirm availability of created product code with the factory



ISOLATION				
Input to Output	Reinforced	4kVac, 5.7kVdc type tested to 4kVac (equivalent to 5.7kVdc), production tested to 4.3kVdc.		
Input to Earth	Basic	1.5kVac, 2.3 kVdc	Output to Earth	1.5kVac

OUTPUT SPECIFICATION				
	EFE300M	EFE400M		
Output Power	300W	400W	Continuous (including fan supply) or RMS (including Peak power)	
Peak Power	400W	530W	EFE300M - for 10 seconds. Outputs above 36V, 350W. EFE400M - for 10 seconds. No peak power for outputs 47V and above.	
Total Regulation	better than 4%		Including Line (for 90-264Vac input change), Load (for 0-100% load change) and temperature (0-50°C)	
Ripple & Noise	1.5%		pk-pk, using EIAJ test method & 20MHz bandwidth	
Voltage Setting Accuracy	±1%		at 50% load	
Turn on Time	1.5s max		at 90 Vac & 100% rated output power	
Efficiency	90%		typical. 87% typical if Standby Supply is fully loaded	
Hold up	16ms		typical at 90 Vac, 75% load	
Min Load	None			
Transient Response	<5%		of set voltage for 50% load change (in 50µs within the range 25 - 100% load)	
Recovery	<1ms		for recovery to 2% of set voltage	
Short circuit protection	Yes		Auto recovery after removal of short circuit	
Over Temperature protection	Yes		Primary - auto recovers, secondary - cycle power to restart	
Over Voltage Protection	Yes		Latching, need to cycle ac to restart unit.	
Fan supply	12V / 1A		Depending on 'Case/Fan Option' selected. See p1 for details	

GLOBAL SIGNALS	
Remote on/off	Enable - TTL logic level low (relative to Standby 0V) enables channel 1 and fan supply Inhibit - TTL logic level low (relative to Standby 0V) inhibits channel 1 and fan supply
Standby Supply	5V / 2A or 12V / 1A, isolated supply, not affected by remote on/off.
Power Good	Logic high indicates ac supply is good and Ch1 is within regulation
ORing FET	Allows redundant connection of power supplies with no additional diodes required.

ENVIRONMENT	
Temperature	0 to 50°C operational, -40°C to 70°C storage (max 12 months). Full load, with 2m/s air blown from input to output (approximately 10CFM)
Convection Rating	TBC
Derating	50 to 70°C derate each output by 2.5% per °C
Low Temp Startup	-20°C
Humidity	5 - 95% RH non condensing
Shock	±3 x 30g shocks in each plane, total 18 shocks 30g shock = 11ms (+/-0.5msec), half sine Conforms to EN60068-2-27, EN60068-2-47, IEC68-2-27, IEC68-2-47, JIS C0041-1987. Conforms to MIL-STD-810E/F, Method 516.5, Pro I, IV, VI
Vibration	Single axis 10 - 500 Hz at 2g (sweep and endurance at resonance) in all 3 planes Conforms to EN60068-2-6, IEC68-2-6 Conforms to MIL-STD-810E, Method 514.4, Pro I, Cat 1,9
Altitude	-200 to 3000 metres operational (-200 to 5000m storage/transportation)
Pollution	Degree 2, Material group IIIb

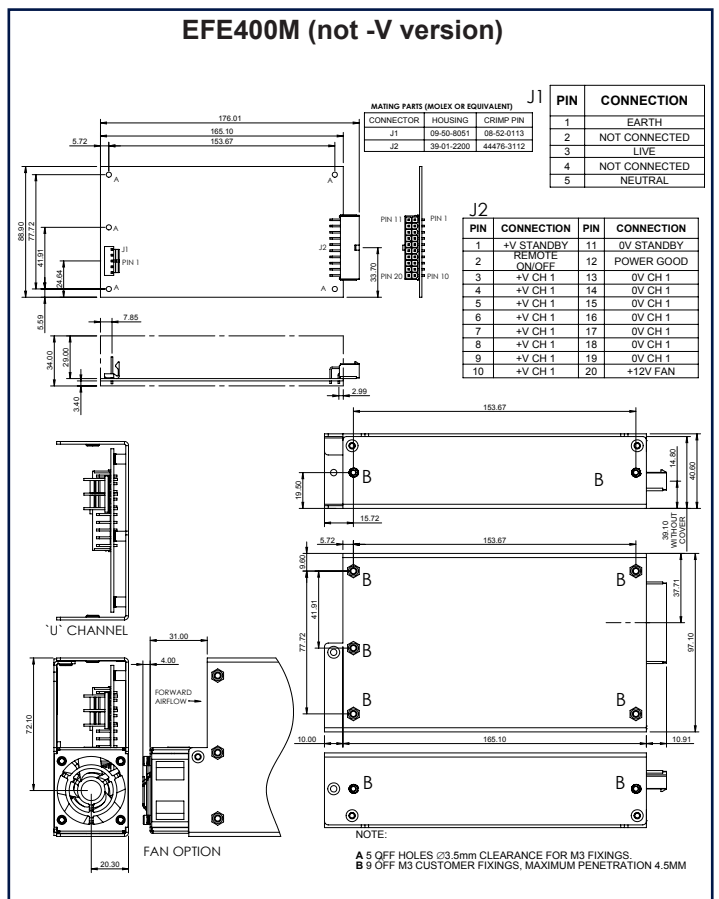
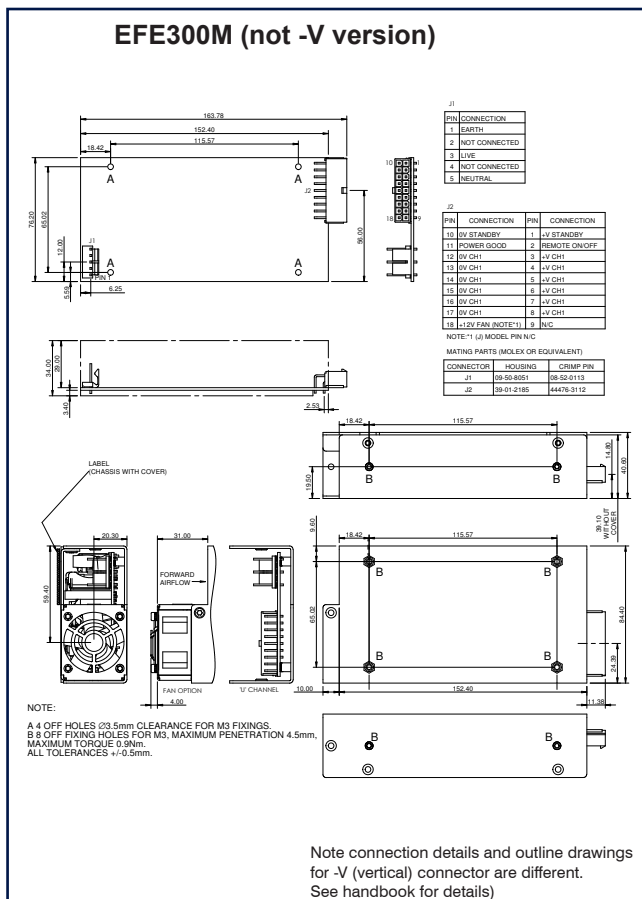
IMMUNITY EN61000-6-2:2005				Criteria
Electrostatic Discharge	EN61000-4-2	Level 4	Air discharge 15kV Contact discharge 8kV Not applicable to open frame units	A
Electromagnetic Field	EN61000-4-3	Level 3	12V/m	A
Fast / Burst Transient	EN61000-4-4	Level 4	ac input tested to 4.4kV dc output tested to 2.2kV	A
Surge Immunity	EN61000-4-5	Level 3	Common mode - 2.2kV Differential - 1.1kV	A
Conducted RF Immunity	EN61000-4-6	Level 3	12V	A
Power Frequency Magnetic Field	EN61000-4-8	Level 4	30A/m	A
Voltage Dips, Variations, Interruptions	EN61000-4-11	Class 3	Criteria B for 5 sec interruption Criteria B for 1 cycle interruption	A
Ring Wave	EN61000-4-12	Level 3	Common mode - 2.2kV Differential - 1.1kV	A
Voltage Fluctuations	EN61000-4-14	Class 3		A



EMISSIONS EN61000-6-3:2007, EN60601-1-2:2001		
Radiated Electric Field	EN55011, EN55022	(as per CISPR.11/22) Class B, FCC47 part 15 subpart B see application note for details
Conducted Emissions	EN55011, EN55022	(as per CISPR.11/22) Class B, FCC47 part 15 subpart B
Conducted Harmonics	EN61000-3-2	Class A Class C - (at 100W and above)
Flicker	EN61000-3-3	Compliant - d _{max} only

SAFETY APPROVALS					
	Edition / Date	Amendments		Edition / Date	Amendments
EN 60950-1	Edition 2 - 2006		IEC 60950-1*	Edition 2 - 2005	
UL 60950-1	Edition 2 - 2007		CSA 22.2 No 60950-1	Edition 2 - 2007	
EN 61010-1	Edition 2 - 2001		IEC 61010-1*	Edition 2 - 2001	
EN60601-1	Edition 2 - 1990	A1, A2, A13	IEC60601-1*	Edition 2 - 1988	A1, A2
CE Mark	LV Directive 2006/95/EC (EN60950-1)		UL/CSA 60601-1	Edition 2 - 2003	With Revisions 2006
* CB certificate and Report available on request			Check with factory for status of approvals		

OUTLINE & CONNECTION DRAWINGS



Notes 1. All customer fixings M3

2. Maximum Penetration 4.5mm

3. Maximum torque 0.9Nm

4. All tolerances +/-0.5mm



TDK-LAMBDA EMEA

www.emea-tdk-lambda.com



TDK-Lambda France SAS

ZAC des Delaches
BP 1077-Gometz-le-Chatel
91940 Les Ulis
France
Tel: +33 1 60 12 71 65
Fax: +33 1 60 12 71 66
france@fr.tdk-lambda.com
www.fr.tdk-lambda.com



TDK-Lambda Italy

Via dei Lavoratori 128/130
20092 Cinisello Balsamo (MI)
Italy
Tel: +39 02 61 29 38 63
Fax: +39 02 61 29 09 00
info.italia@it.tdk-lambda.com
www.it.tdk-lambda.com



TDK-Lambda Germany GmbH

Karl-Bold-Strasse 40
77855 Achern
Germany
Tel: +49 7841 666 0
Fax: +49 7841 5000
info.germany@de.tdk-lambda.com
www.de.tdk-lambda.com



TDK-Lambda UK Ltd.

Kingsley Avenue
Ilfracombe
Devon EX34 8ES
United Kingdom
Tel: +44 (0) 12 71 85 66 66
Fax: +44 (0) 12 71 86 48 94
powersolutions@uk.tdk-lambda.com
www.uk.tdk-lambda.com



Austria Sales Office

Aredstrasse 22
2544 Leobersdorf
Austria
Tel: +43 2256 655 84
Fax: +43 2256 645 12
info.germany@de.tdk-lambda.com
www.de.tdk-lambda.com



Nemic Lambda Ltd.

Kibbutz Givat
Hashlosha 48800
Israel
Tel: +9 723 902 4333
Fax: +9 723 902 4777
info@nemic.co.il
www.nemic.co.il

LOCAL DISTRIBUTION

